IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of reconstructing coherent scatter computed tomography data of an object of interest, the method comprising the acts of:

acquiring attenuation data of the object of interest from primary radiation transmitted through the object of interest;

performing a beam hardening compensation of scatter radiation data ~~on~~ based on the acquired attenuation data and based on an energy shift of an equivalent object equivalent to the object of interest; wherein the scatter radiation data is based on scatter radiation scattered from the object of interest; and

reconstructing the coherent scatter computed tomography data by using the compensated scatter radiation data.

2.(Previously Presented) The method of claim 1, wherein the energy shift of the equivalent object caused by a beam hardening effect is known.

3.(Previously Presented) The method of claim 1, further comprising the acts of:

determining a mean attenuation caused by the object of interest based on the attenuation data;

determining an equivalent thickness of a pre-selected material of the equivalent object based on the mean attenuation;

determining the energy shift based on the equivalent thickness of the pre-selected material; and

compensating the scatter radiation data by using the energy shift.

4.(Previously Presented) The method of claim 1, further comprising the acts of:

reconstructing a volume data set comprising absorption coefficients of the object of interest;

determining radiation spectra for scattered photons of the

scatter radiation;

determining mean energies of the scattered photons based on the radiation spectra; and

performing a reconstruction of the coherent scatter computed tomography data by using the mean energies.

5.(Previously Presented) The method of claim 1, further comprising the acts of determining, based on the attenuation data, a material which is located on a path of a scattered photon of the scatter radiation in the object of interest;

determining a mean energy of the scattered photon using an absorption spectrum of the material; and

using the mean energy for the reconstruction.

6.(Previously Presented) A coherent scatter computed tomography apparatus, the apparatus comprising:

a detector assembly with a source of radiation,

a first detector; and

a second detector;

wherein the detector assembly is arranged for rotation around

an object of interest;

wherein the first detector and the second detector are arranged opposite to the source of radiation;

wherein the first detector is arranged for acquiring attenuation data of the object of interest from primary radiation transmitted through the object of interest;

wherein the second detector is arranged for acquiring scatter radiation data of the object of interest from scatter radiation scattered from the object of interest;

wherein the apparatus performs a beam hardening compensation of the scatter radiation data based on the acquired attenuation data and based on an energy shift of an equivalent object equivalent to the object of interest; and

wherein the apparatus performs a reconstruction of coherent scatter computed tomography data by using the compensated scatter radiation data.

7. (Previously Presented) The apparatus of claim 6, wherein the beam hardening compensation is performed based on an energy shift determined based on an equivalent object having a known beam

hardening effect.

8.(Previously Presented) The apparatus of claim 6, wherein, based on the attenuation data, a material is determined which is located on a path of a scattered photon of the scatter radiation in the object of interest; wherein an absorption spectrum of the material is used for determining a mean energy of the scattered photon; and wherein the mean energy is used for the reconstruction.

9.(Previously Presented) A data processing device for reconstructing coherent scatter computed tomography data of an object of interest, wherein the device comprises:

a memory for storing attenuation data and scatter radiation data; and

a data processor adapted to perform the following acts:

acquiring attenuation data of the object of interest from primary radiation transmitted through the object of interest;

performing a beam hardening compensation of scatter radiation data based on the acquired attenuation data and based on an energy shift of an equivalent object equivalent to the object of interest;

wherein the scatter radiation data is based on scatter radiation scattered from the object of interest; and

reconstructing the coherent scatter computed tomography data by using the compensated scatter radiation data.

10. (Previously Presented) A computer readable medium embodying a computer program for reconstructing coherent scatter computed tomography data of an object of interest, wherein, when the computer program is executed on one of a data processor and a coherent scatter computed tomography apparatus, the following acts are executed:

acquiring attenuation data of the object of interest from primary radiation transmitted through the object of interest;

performing a beam hardening compensation of scatter radiation data based on the acquired attenuation data and based on an energy shift of an equivalent object equivalent to the object of interest;

wherein the scatter radiation data is based on scatter radiation scattered from the object of interest; and

reconstructing the coherent scatter computed tomography data by using the compensated scatter radiation data.

11. (Previously Presented) The method of claim 1, wherein the performing act includes correcting energy of the scatter radiation by the energy shift of the equivalent object.

12. (Previously Presented) The coherent scatter computed tomography apparatus of claim 6, wherein the beam hardening compensation includes correcting energy of the scatter radiation by the energy shift of the equivalent object.

13. (Previously Presented) The data processing device of claim 9, wherein the performing act includes correcting energy of the scatter radiation by the energy shift of the equivalent object.

14. (Previously Presented) The computer readable medium of claim 10, wherein the performing act includes correcting energy of the scatter radiation by the energy shift of the equivalent object.